



September 21, 2023

Power Supply Expanded Flexibility Agreement

Resolution 1483



Power Supply Expanded Flexibility Agreement

- TVA program available to local power companies (LPCs) under the long-term partnership agreement
- Allows for LPC to produce up to 5% of its own electric energy requirements using defined energy resources
- Energy resources include solar, wind turbine, natural gas, or other sources permitted by TVA
- KUB's flexibility amount is 82 MW (for solar)
- Energy resource must be located within TVA's service territory and directly connected to TVA's system or LPC's system
- Cost of energy resource generation displaces TVA's wholesale power cost

Flexibility Options

- Flexibility projects originally limited to LPC's service territory
- TVA and LPC working group (including KUB) collaborated to develop an expanded flexibility program
 - Projects can now be deployed anywhere in the TVA region
 - Green Invest solar can be designated a flexibility project
 - LPCs can partner together on projects

Resolution 1483

- Authorizes execution of Power Supply Expanded Flexibility Agreement with TVA

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September 21, 2023

Century II Program Updates



Century II Basics

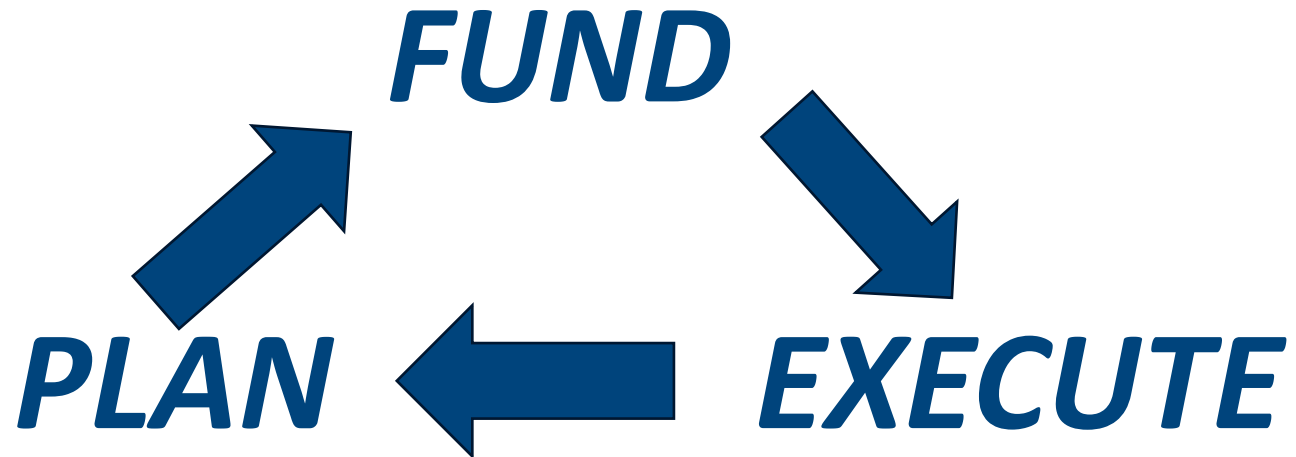
- Started as PACE 10 in 2004 (wastewater)
- Century II intended to start in 2007 (electric, gas, and water)
- Actual start in 2009 after economic recession
- Strategic asset maintenance and replacement program
 - Comprehensive assessment of all four systems
 - Data-driven prioritization of infrastructure needs
 - Inspection and maintenance programs
 - Development of asset replacement plan



CENTURY II

Century II Programs

- Programmatic approach based on assets
 - Examples:
 - Blockage abatement (wastewater collection maintenance)
 - Substation refurbishment (electric substations)
- Sustainable and perpetual based on asset lifecycles and maintenance requirements

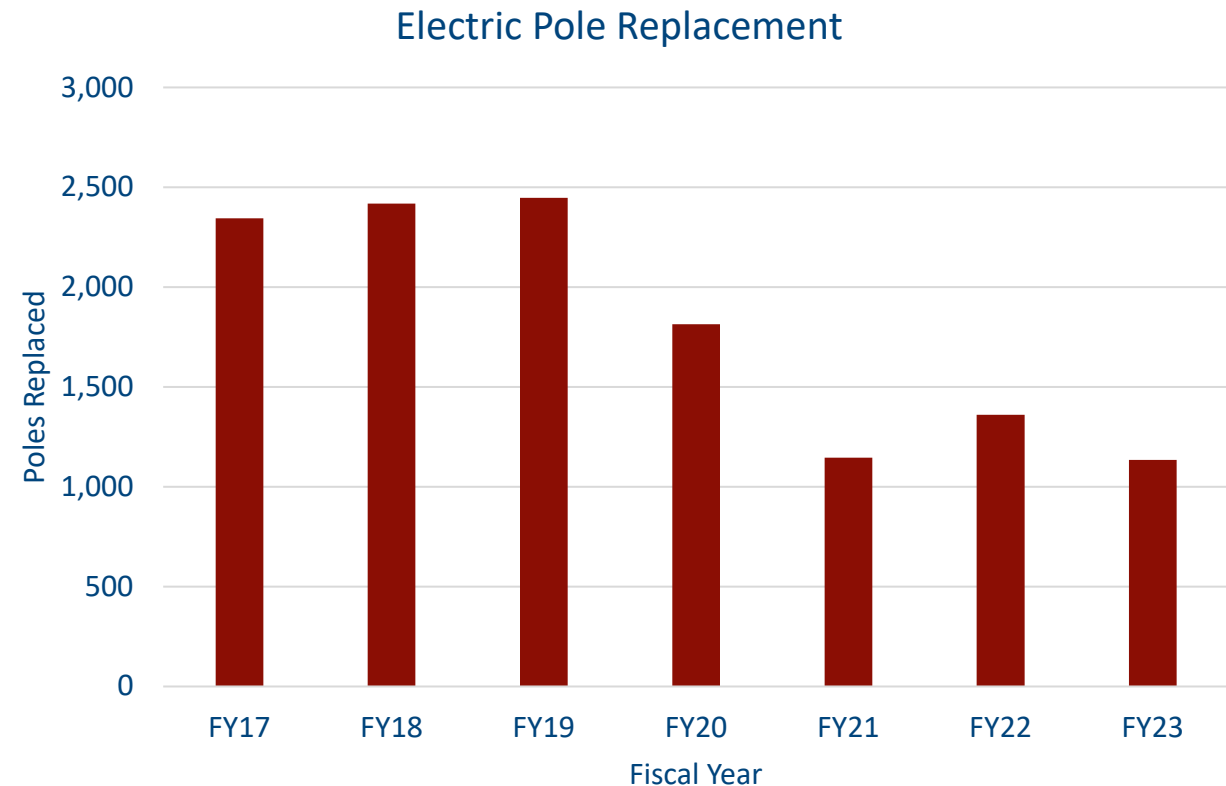


Century II Accomplishments & Challenges

- Increased electric reliability ~33%
 - Highest designation in American Public Power Association's Reliable Public Power Provider Program
- Wastewater SSOs down over 80% since 2004
- Water main breaks reduced by 60% since 2007
- Increased natural gas reliability through transmission projects, and removal of cast iron and low-pressure steel pipe
- Pandemic-related rate and budget deferrals
- Post-pandemic inflation, supply chain, and labor market pressures

Electric Focus on Safety & Reliability

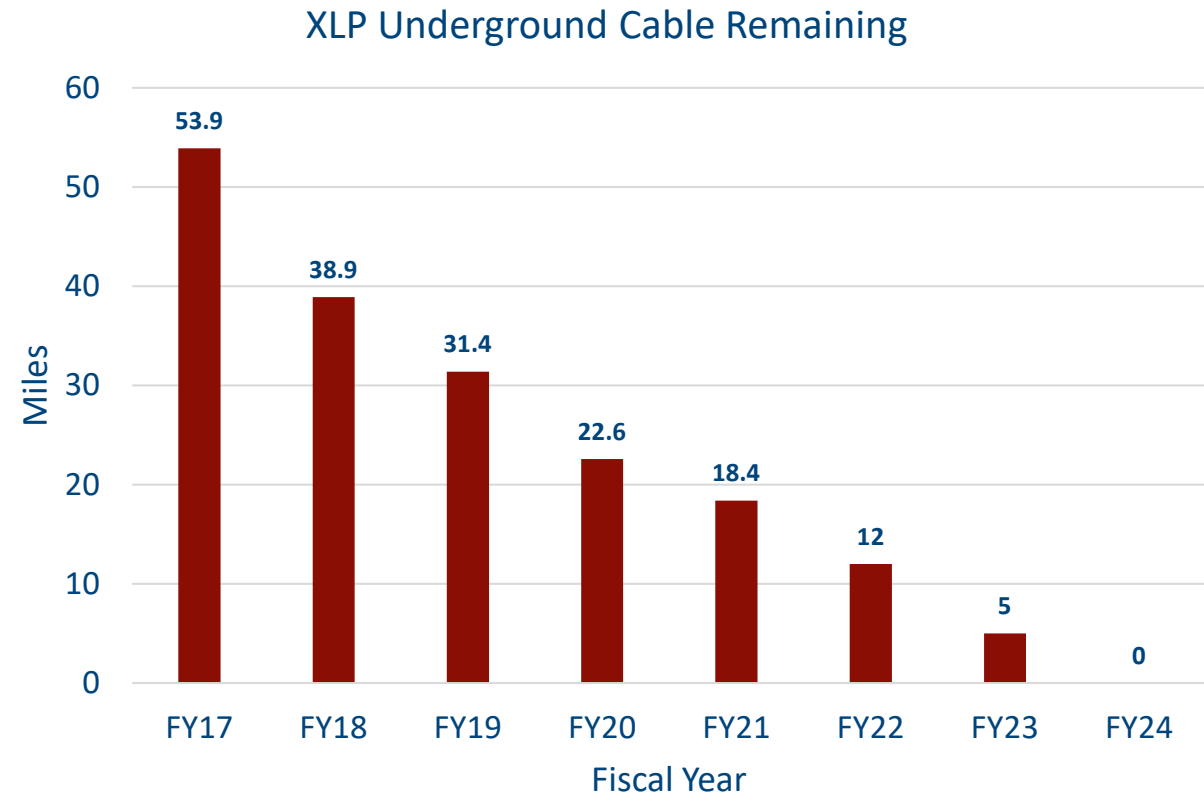
- Pole replacement
 - Reduced pace from 2,600 to 1,400 per year (130,000 total)
 - Reviewing replacement pace
- Transmission line replacement
 - 83 miles replaced between FY17 and FY23 (266 miles total)
 - 31% of transmission system replaced over that span
 - On track to complete by FY32



Electric

Focus on Safety & Reliability

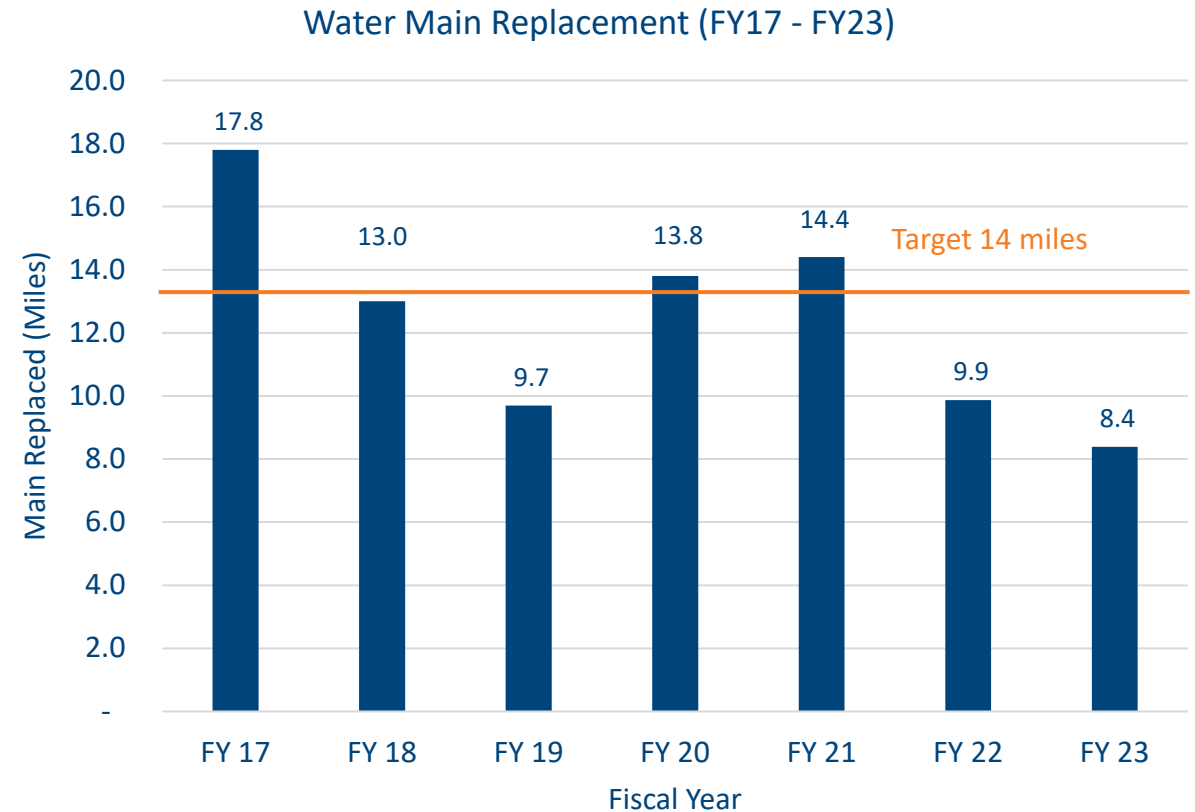
- Substations
 - 15 substation refurbishments between FY17 and FY23
 - Over 70% complete (63 total)
- Distribution system
 - Vegetation management
 - Cable replacement
 - Direct-buried XLP underground service entrance cable removal this fiscal year
 - In conduit replacement program next
 - Grid modernization
 - Fault location, isolation, and service restoration (FLISR)



Water

Focus on Quality & System Resiliency

- Main replacement
 - Prioritization model (1,415 miles)
 - Reviewing pace
- Pump stations
 - Biannual station assessments guide investment (27 total)
- AMI/district metering
 - Locates leakage
 - Find and fix program drives it down



Water

Focus on Quality & System Resiliency

- Mark B. Whitaker Treatment Plant
- Water supply master plan (WSMP) drives investment
- Capital spend FY17-FY23
 - \$44.1M, \$33.8M related to WSMP
- Filters project underway \$65M
- Phase 3 improvements forecasted to \$65M in FY26-FY32

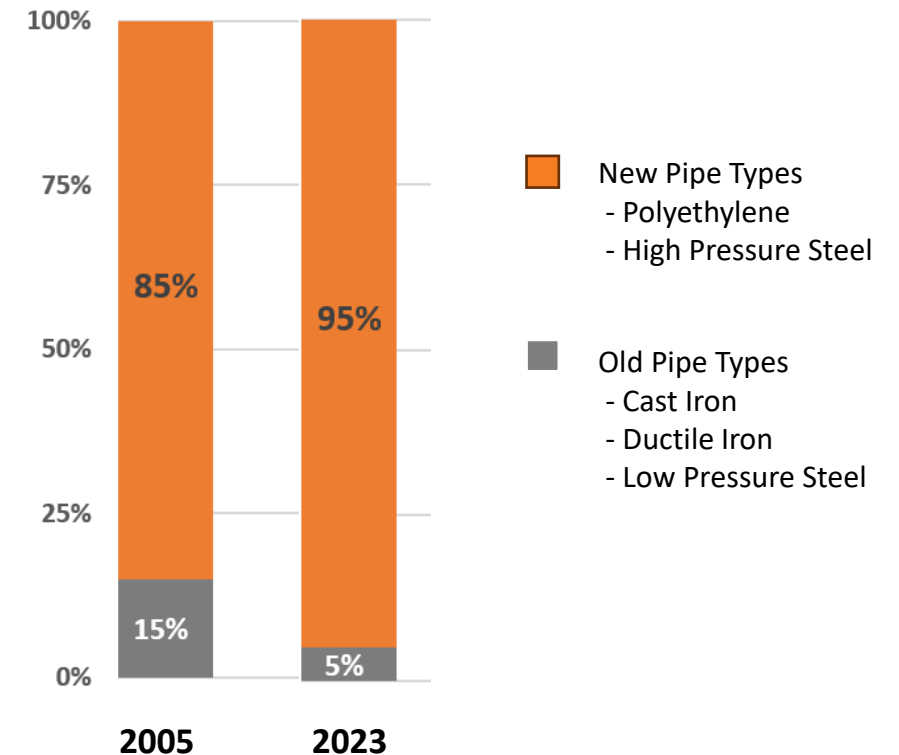
Phase	Project
Phase 1	High Service Main
	Phase 1 Electrical Upgrades
	Generators
Phase 2	Filters
Phase 3	Phase 2 Electrical Upgrades
	High Service Pump Station and Clearwell
	Raw Water Distribution
	Source Water Resiliency

Complete
Construction
Future

Natural Gas

Focus on Safety & Growth

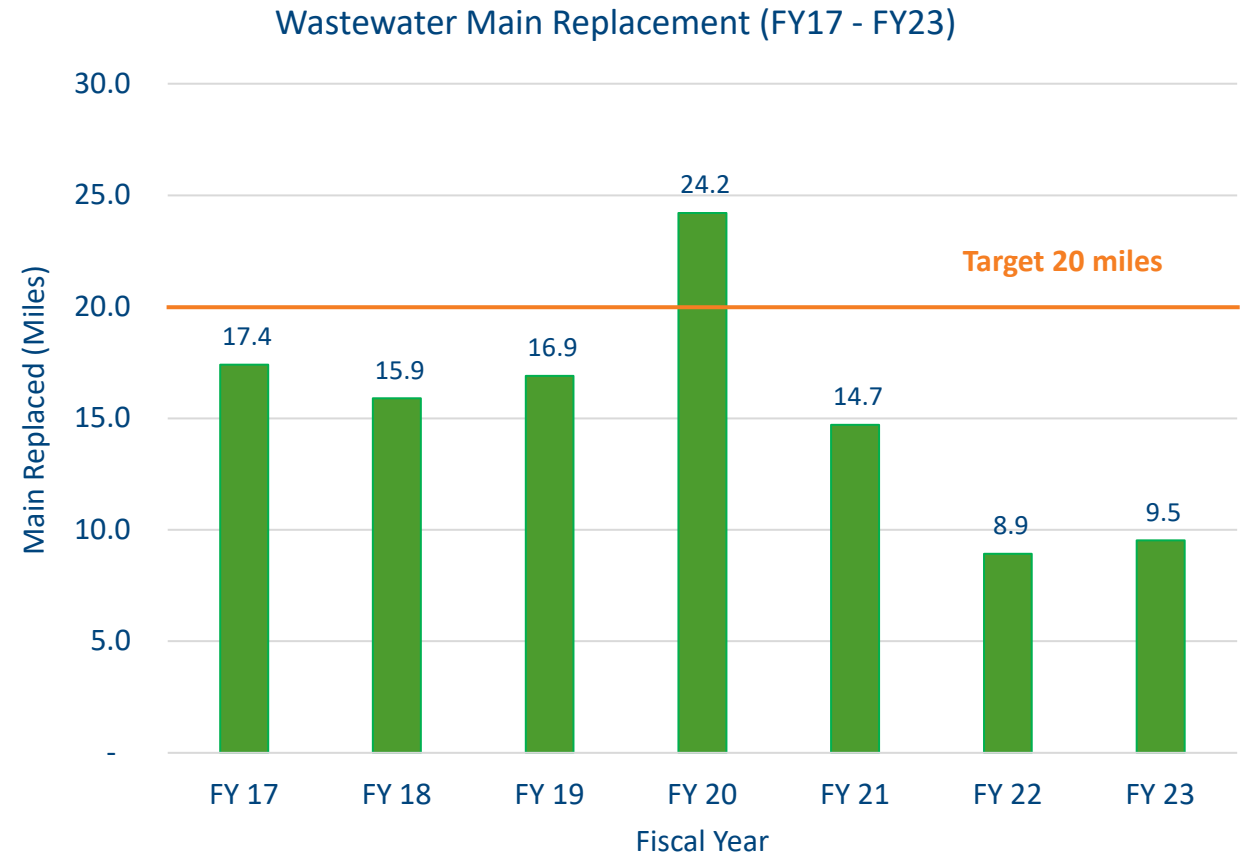
- Distribution Integrity Management Program (DIMP) drives investment
- Pipe replacement
 - Low pressure steel, ductile iron, and cast iron on 5% of system (2,492 miles total)
 - 53 miles replaced between FY17 and FY23
- High pressure system
 - Improves reliability and operational flexibility (72 miles total)
- Resiliency
 - 10 miles of looping projects completed since FY17



Wastewater

Focus on Environment & System Resiliency

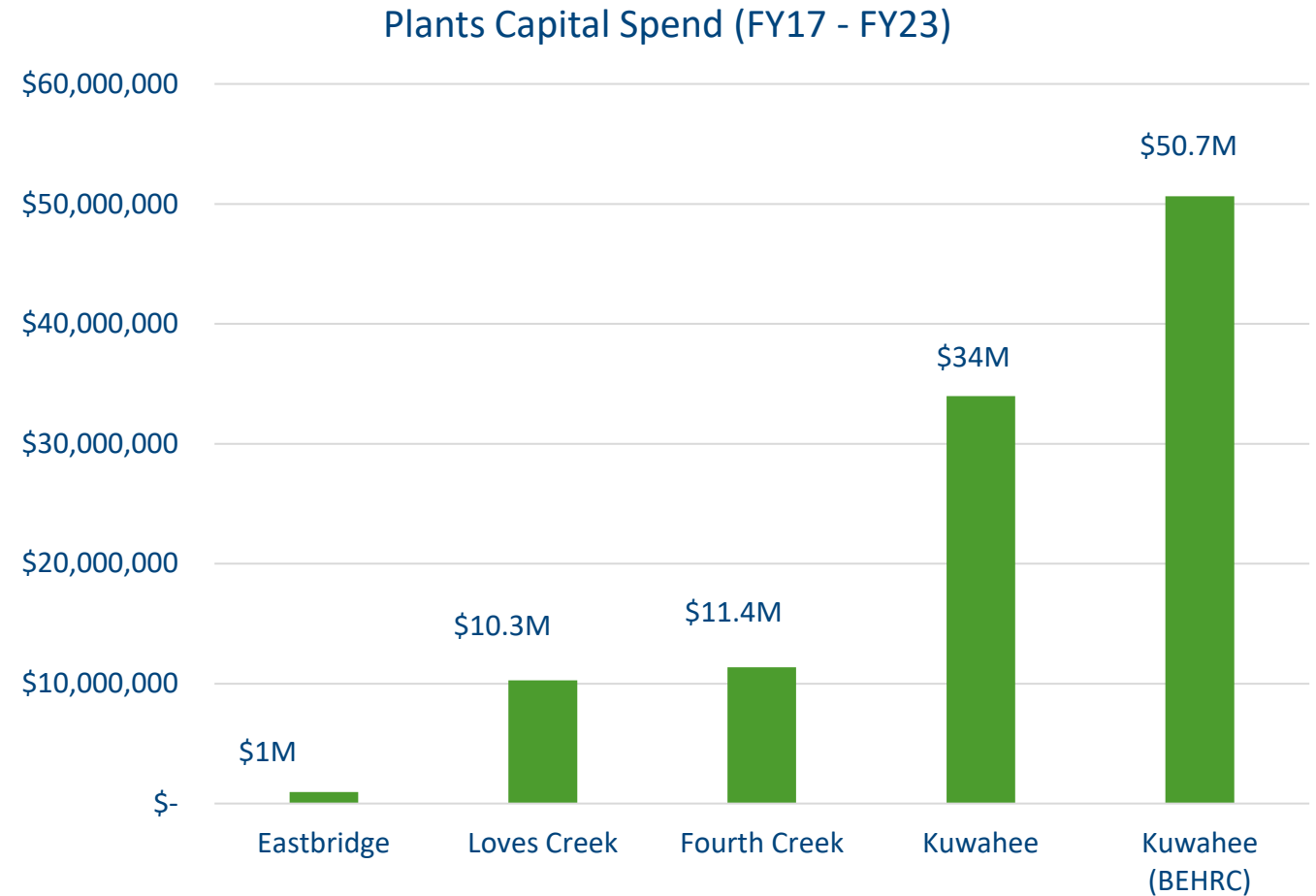
- Pipe replacement
 - 25 mile/year target during consent decree
 - Currently at 20 miles/year
 - 1,327 miles total
 - Evaluating pace
- Lift stations
 - Station evaluation program guides investment (64 total)



Wastewater

Focus on Environment & System Resiliency

- \$107M spent across four wastewater treatment plants since FY17
- Biologically enhanced high-rate clarification (BEHRC) project was final project of consent decree
- Facilities condition assessments will guide future investment
 - Kuwahee complete next year



Summary

- Century II significantly improved system performance and reliability for all four utilities
- Century II programs ensure maintenance and replacement activities are documented and consistent
- Our goal has been to balance system needs, reliability, and economic conditions with our funding recommendations
- Post-pandemic inflation, supply chain, and labor-market pressure are impacting KUB's ability to perform a similar amount of work
- We are currently assessing these impacts and recommendations will be part of the inflation response plan

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September 21, 2023

Energy & Water Savings Workshop



TAKE CONTROL OF YOUR ENERGY USAGE

Typical monthly costs based on a \$100 utility bill



\$55

Heating /
Cooling



\$20

Water
Heating



\$8

Lighting /
Misc.



\$7

Laundry /
Dishwashing



\$5

Fridge /
Freezer



\$5

Cooking



WHERE IS YOUR MONEY GOING?

Appliance Energy Usage Examples (Yearly Cost)



\$106

Clothes dryer

6 HRS / WEEK



\$30

42" LED TV

36 HRS / WEEK



\$66

Refrigerator

CONTINUOUS



\$23

TV Set-Top Box

CONTINUOUS



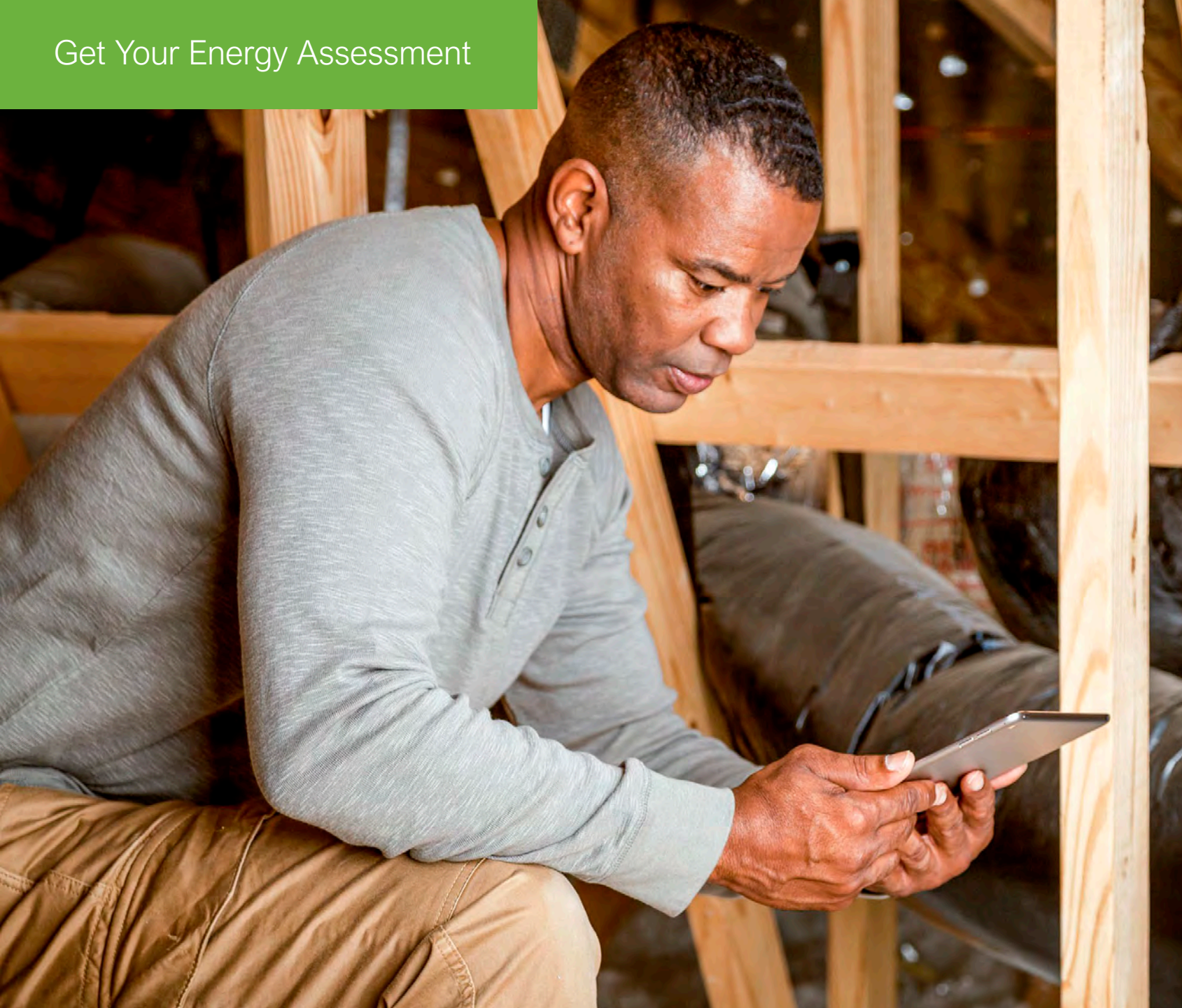
\$2

LED bulb

21 HRS / WEEK

Calculations based on average cost at rate of \$.10 per kWh for one year

Get Your Energy Assessment



Energy upgrades, the right way

Learn about your home's energy saving opportunities.

Visit www.energyright.com to take a free self-guided DIY Home Energy Assessment

Or request an in-home energy evaluation (fees may apply).

You will **receive a tailored list** of recommended energy upgrades to make your home the best it can be.

www.Energyright.com



MAINTENANCE

Change air filters monthly

Schedule seasonal checkup by a TVA Quality Contractor Network member (2x year)

Check your ductwork

Keep all vents and the return grill open & free from furniture and other barriers to air flow



NEW HVAC SYSTEM

The higher the SEER rating, the more efficiently your heating and cooling system will operate

Use a Quality Contractor Network member
To find a Quality Contractor Network member go to www.energyright.com
Or call 1-855-237-2673

20x30x1

COMMON DUCT PROBLEMS



Leaky duct connection



Return leaks



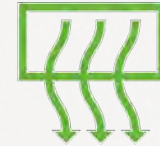
Furniture blocking register



Leaks at furnace & filter slot and duct tape failure



Fallen duct insulation



Supply leaks



Kinks in ductwork restricting airflow

Residential Efficiency Incentives

- New efficiency rebates available through TVA EnergyRight starting October 1, 2023
- Available to residential customers in single-family homes and separately metered duplexes/townhomes
- Upgrades performed by TVA qualified contractor network members
- Appliance retrofits must replace existing electric or dual-fuel unit
- Qualifying upgrade examples:
 - HVAC systems, duct systems, water heaters, air sealing, insulation, windows, and doors

Inflation Reduction Act (IRA) Incentives

- Funding available through the 2022 IRA
- Receive up to 30% in tax credits energy improvements
 - Energy Efficient Home Improvement Credit
 - Residential Clean Energy Credit
- Home Energy Rebates (Coming Soon)
 - Home Efficiency Updates
 - Home Electrification Upgrades



Usage and Tips

The recommended water heater setting is **120°**

Take **shorter, cooler showers** in the summer

Use **cold water** wash

Summer is the perfect time to **line dry clothes**



WATER PIPE INSULATION

First 6 feet of line

Hot and cold (insulate both)

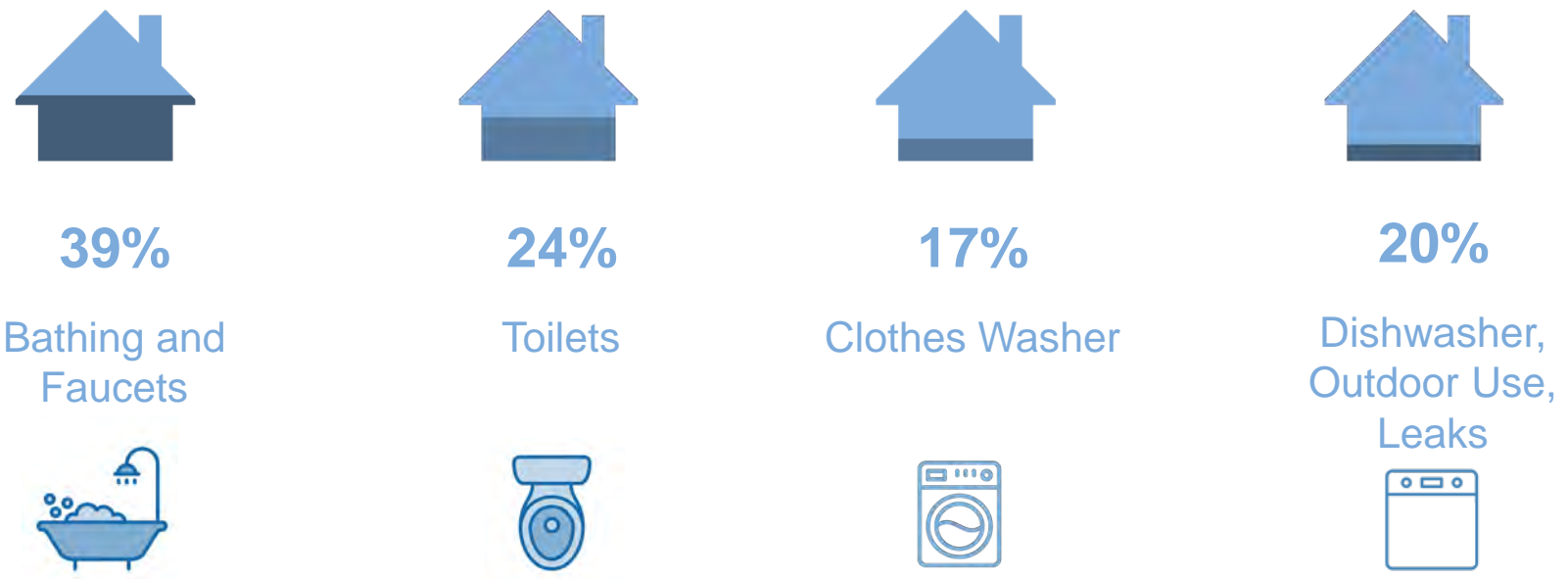


LOWER FLOW

Sink aerators, kitchen aerators,
showerheads

Use less “heated” water

TAKE CONTROL OF YOUR WATER USAGE



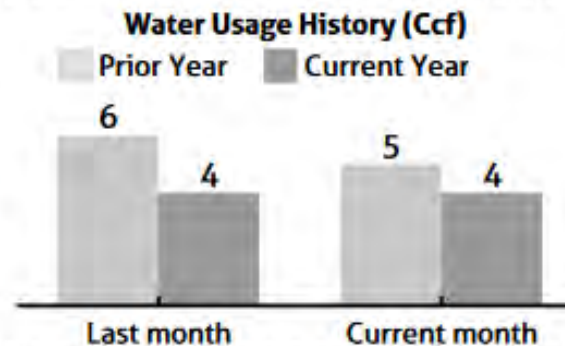
Source: EPA.GOV/watersense



Service Type: Water - Residential
Billing Period: 07/11/2023 - 08/08/2023
Read Date: 08/08/2023
Total Water Usage: 4 Ccf = 2,992 Gal

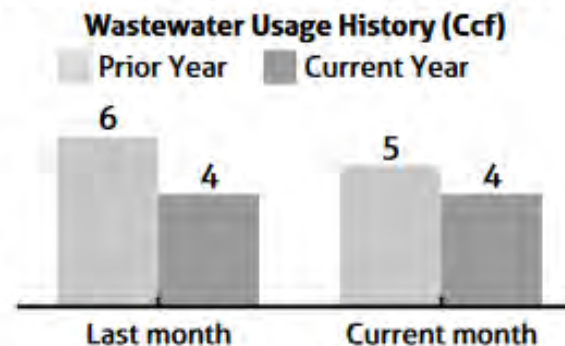
Meter Number	Current Reading	Prior Reading
84038591	144 Ccf	140 Ccf

Basic Service: \$18.00
 Water Usage: \$10.10
 Sales Tax: \$2.60
Total Water Charges: \$30.70



Service Type: Wastewater - Residential
Billing Period: 07/11/2023 - 08/08/2023
Read Date: 08/08/2023
Total Wastewater Usage: 4 Ccf = 2,992 Gal
(Based on water consumption)

Basic Service: \$35.90
 Wastewater Usage: \$24.80
Total WW Charges: \$60.70



Inspect exposed pipes for leaks



Galvanized Pipe



Copper Pipe



Find and Repair Leaks Promptly

Water Usage (Current Meter: 84038591)

[EXPORT TO CSV](#)

[Choose another service](#)

For

August 1, 2023



to

August 31, 2023



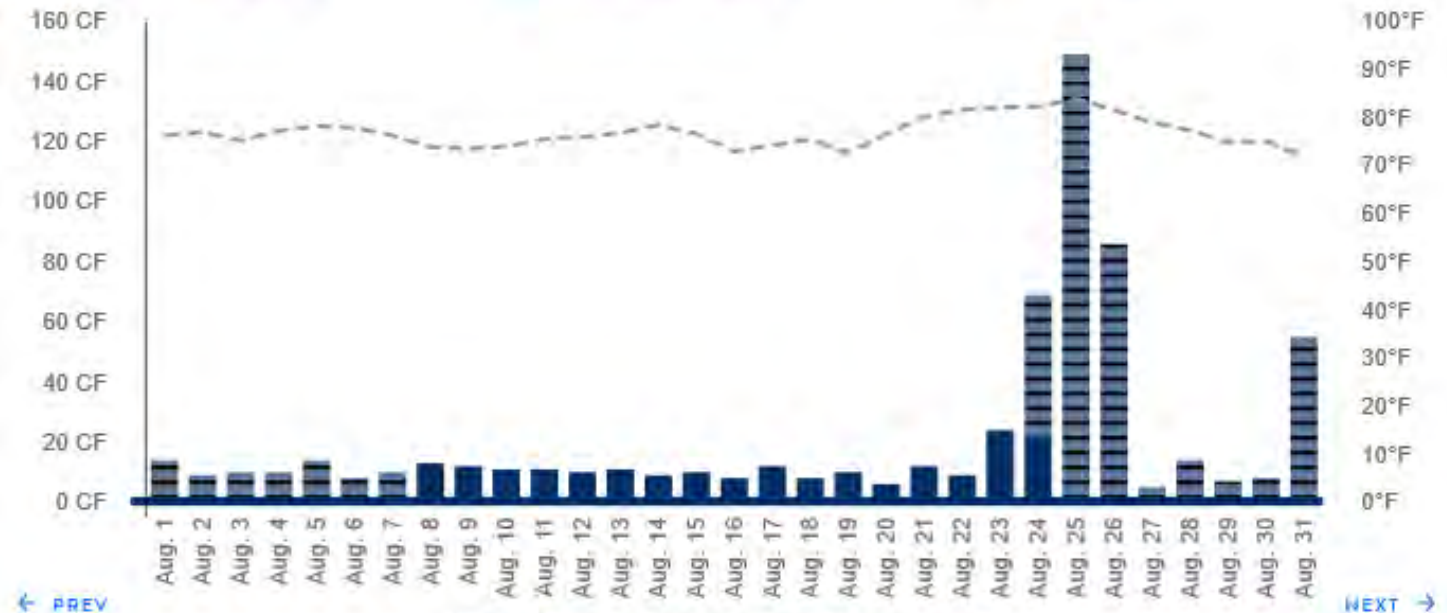
Show Usage

Show Cost

■ Water Svc Chrg - First 2 CCF

■ Water Svc Chrg - Over 2 CCF

- - - Temperature



Click on a day to see more granular information.

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